# Renewable Portfolio Standards and Renewable Energy Credits

A renewable portfolio standard (RPS) requires electricity retailers to acquire a minimum percentage of their power from renewable energy resources. Initiative 937 is an RPS.

## Initiative 937

Approved by voters in 2006, the Energy Independence Act, also known as Initiative 937, requires an electric utility with 25,000 or more customers to use "eligible renewable resources" to meet the following annual targets:

- at least 3 percent of its load by January 1, 2012, and each year thereafter through December 31, 2015;
- at least 9 percent of its load by January 1, 2016, and each year thereafter through December 31, 2019; and
- at least 15 percent of its load by January 1, 2020, and each year thereafter.[1]

Under Initiative 937, "eligible renewable resource" includes wind; solar; geothermal energy; landfill and sewage gas; wave and tidal power; and certain biomass and biodiesel fuels.[2] Electricity produced from an eligible renewable resource must be generated in a facility that started operating after March 31, 1999. The facility must either be located in the Pacific Northwest or the electricity from the facility must be delivered into the state on a real-time basis. Incremental electricity produced from efficiency improvements at hydropower facilities owned by qualifying utilities is also an eligible renewable resource, if the improvements were completed after March 31, 1999.

## Using Renewable Energy Credits to Meet an RPS Target

Initiative 937 allows utilities to use "renewable energy credits" (RECs) to meet their acquisition targets.[3] RECs can be bought and sold in the marketplace, and they may be used during the year they are acquired, the previous year, or the subsequent year.[4]

Under Initiative 937, a REC is a tradable certificate of proof, verified by the Western Renewable Energy Generation Information System (WREGIS), of at least one megawatt hour (MWh) of an eligible renewable resource where the generation facility is not powered by fresh water.[5] A REC represents all the "nonpower attributes associated" with the power.[6]

## Characteristics of a REC

The price of renewable power has two components: the price of the electrons plus a premium for the renewable value of the electrons. The premium exists because of renewable energy mandates or because of purchases driven by voluntary programs to promote renewable power, such as Washington's "green power" program.[7]

The premium for renewable power can be represented by a "market instrument,"[8] which may be "unbundled" or sold separately from the associated electrons, usually in one MWh units. These units are called "unbundled RECs" and have been called "environmental currency."[9] Unbundled RECs lower the costs of complying with an RPS by reducing transmission and distribution costs and by expanding the market for renewable electricity.[10] Because the environmental attributes of a renewable power source reside solely in an unbundled REC, any associated electrons are considered generic electricity in the power markets and priced accordingly.

When a REC is generated, it is assigned a unique serial number that can be tracked by a web-based system.[11] The western states and provinces of the United States and Canada, which make up the Western Electricity Coordinating Council (WECC),[12] use a tracking system called the Western Renewable Energy Generation Information System (WREGIS).[13]

While a WREGIS certificate will list the states under which the renewable energy may qualify, WREGIS does not guarantee the validity of the REC.[14] Buyers must do their own research to confirm the RPS eligibility of a REC. Attachment 1 is an edited WREGIS screenshot showing the states that could accept a specified REC.

When a member of WREGIS uses or spends a REC to demonstrate compliance with an RPS, the REC is retired from circulation.

Attachment 2 is a chart that lists the major characteristics of RECs in the WECC states.

## REC Markets[15]

Buyers of large volumes of RECs, such as utilities, can find it difficult to determine the price of RECs. Unlike the markets for electricity and natural gas, there are no central clearing houses for RECs, nor is there a futures market. In addition, contracts for large volumes of RECs often contain confidentiality clauses that prohibit price disclosure for the term of the contract. For these reasons, institutional buyers typically use request for proposals (RFPs) and brokers for price discovery.

The market for RECs can be divided into voluntary and compliance markets.[16] The voluntary market is the source of RECs for the various green power programs operated by utilities and for persons and companies interested in supporting renewable energy.[17] For example, the Washington Utilities and Transportation Commission reports that all three investor-owned utilities in the state use RECs for their green power programs.[18] REC aggregators like the Bonneville Energy Foundation and 3Degrees are the main source of RECs in the voluntary market,[19] although many public utilities in Washington purchase their voluntary-market RECs from the Bonneville Power Administration.

The compliance market for RECs is a result of the various RPSs throughout the United States. Compared to prices for voluntary RECs, the prices for compliance RECs tend to be higher because of variations among state RPS requirements, such as geographic restrictions on eligible energy sources. It's expected that the price of voluntary and compliance RECs will converge over time as RPS targets begin to increase.

Special note should be taken of recent actions in California. By executive order, Governor Schwarzenegger raised California's RPS from 20 percent by 2010 to 33 percent by 2020.[20] The California Air Resources Board (CARB) is currently developing regulations to enforce the new target and has proposed a "concept outline" that would permit unbundled RECs if they are tracked by WREGIS.[21]

Tradable unbundled RECs would likely benefit California's electricity consumers by lowering the costs of complying with that state's RPS. And renewable energy developers outside the state would likely benefit by the flow of renewable investment dollars to regions with lower construction and operating costs. Finally, those utilities in the Pacific Northwest with surplus renewable power could benefit by the increased demand for their RECs. However, the Northwest Power and Conservation Council[22] has identified several issues of concern relating to California's potential demand for the region's unbundled RECs.[23] For example, unbundled RECs sent to California could depress the value of the associated electrons that remain in the region. In addition, the regional utilities could face higher costs for integrating wind power constructed to meet California's increased demand for RECs. The Council will examine these issues as part of its action plan for the Sixth Power Plan.[24]

## Brief History of RECs

The concept of tradable renewable energy credits arose in the mid-1990s during the California Public Utilities Commission's (CPUC) electricity restructuring proceedings.[25] Like the rest of the country, California's energy market was dominated by regulated, vertically integrated utilities. And in 1994, the CPUC determined that the electricity industry should be restructured to allow customers to choose among competing generation providers with the expectation that electricity prices would eventually decline.[26]

Because regulated utilities were generally required to maintain "public purpose" programs, such as resource diversity and energy efficiency, many environmentalists and renewable energy advocates feared that a competitive electricity market would not favor the longer investment horizons and increased investment risk of renewable energy sources.[27] To address this problem, the commission ultimately adopted a concept that was developed by Nancy Rader, a policy advisor for the American Wind Energy Association (AWEA),[28] and advanced by the AWEA, the California Biomass Energy Alliance, the Geothermal Energy Association, and the Solar Thermal Electric Alliance. Called a "renewable portfolio standard," the concept required retail electricity suppliers to purchase RECs equivalent to a certain percentage of their total annual energy sales.[29] The CPUC directed the formation of a "Renewables Working Group" to develop the RPS concept.[30]

As part of the Renewables Working Group's effort, Rader hired Brent Haddad, a Ph.D. student in economics at U.C. Berkeley, to assist her.[31] Haddad had been a broker of $SO_2$ reduction credits when that program was launched in 1992, and he had also been certified by the National Association of Securities Dealers as a securities principal. Haddad was also familiar with marketable permits to divert water and harvest fish. [32] But Haddad's major inspiration for RECs was the tradable obligations under the New Jersey Fair Housing Act, a 1985 law which allowed

suburban municipalities to transfer a portion of their affordable housing obligations to urban areas where more lower-income households were located.[33]

Haddad's work was incorporated in the Renewables Working Group report that was delivered to CPUC in August 1996.[34] The report detailed the characteristics that are in all present-day RECs: tradable certificates of proof that a given amount of electricity has been generated by an appropriate renewable fuel source, which can be marketed as a separate product from the power itself.[35]

While the CPUC decided to pursue an RPS, the legislature ultimately rejected the approach in favor of a surcharge-funded program that would sunset after four years.[36] An RPS would not be adopted in California until 2002.[37]

In the mean time, New England utilities and their regulators were discussing how to label green power in a competitive electricity market.[38] In 1996, a New Hampshire pilot program to promote retail competition in electricity resulted in "consumer confusion" because utilities were making "vague marketing claims" about the environmental attributes of their power.[39] During the discussions on how the environmental attributes of power should be tracked, ENRON promoted "GreenTags" as a means of separately packaging the "environmental nature of energy produced from certain generation sources."[40]

Texas established the first trading program for mandatory RECs in 1999.[41] And by that time, various state and utility programs started promoting voluntary green power purchases,[42] leading to the first retail sale of "Green Tags" in 2000, by the Bonneville Environmental Foundation to the U.S. Environmental Protection Agency, Region 10.[43]

Today 31 states have RPSs[44] and most allow RECs for compliance.[45]

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[1] RCW 19.285.040(2)(a).

[2] RCW 19.285.030(10) (defining "eligible renewable resource" to include electricity generated from a specified "renewable resource"); RCW 19.285.030(18) (defining "renewable resource").

[3] RCW 19.285.040(2)(a).

[4] RCW 19.285.040(2)(e).

[5] "Renewable energy credit" is defined in RCW 19.285.030(17). The definition requires that "the certificate is verified by a renewable energy tracking system selected by the department of community, trade, and economic development or its successor." The department selected WREGIS. WAC 194-37-040(31). WREGIS is a database designed to track all renewable energy generation in the geographic area covered by the WECC. It is a voluntary, fee-supported system developed by the Western Governors' Association, the Western Regional Air Partnership, and the California Energy Commission.

[6] RCW 19.285.030(17).

[7] RCW 19.29A.090 (requiring utilities to provide "retail electricity customers a voluntary option to purchase qualified alternative energy resources"). The program is commonly called the "green power" program. *See, e.g.*, WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, 2009 REPORT TO THE LEGISLATURE: INVESTOR-OWNED UTILITIES' GREEN POWER PROGRAMS IN WASHINGTON 6 (December 1, 2009).

[8] K.S. CORY AND B.G. SWEZEY, NATIONAL RENEWABLE ENERGY LABORATORY, RENEWABLE PORTFOLIO STANDARDS IN THE STATES: BALANCING GOALS AND IMPLEMENTATION STRATEGIES 3 (December 2007).

[9] Reiner Musier, *US Mandatory REC Markets—An Established Environmental Infrastructure*, APX WHITEPAPER 1 (2006) (using the term "environmental currency"); ED HOLT AND LORI BIRD, NATIONAL RENEWABLE ENERGY LABORATORY, EMERGING MARKETS FOR RENEWABLE ENERGY CERTIFICATES: OPPORTUNITIES AND CHALLENGES 7 (January 2005) (referring to RECs as renewable attributes "unbundled" from the physical electricity).

[10] CORY AND SWEZEY, *supra* note 8, at 3; EDWARD HOLT AND RYAN WISER, LAWRENCE BERKELEY NATIONAL LABORATORY, THE TREATMENT OF RENEWABLE ENERGY CERTIFICATES, EMISSIONS ALLOWANCES, AND GREEN POWER PROGRAMS IN STATE RENEWABLES PORTFOLIO STANDARDS 3 (April 2007).

[11] HOLT AND WISER, *supra* note 10, at 7-8. The major REC trading systems in the U.S. use software developed and maintained by one company: APX, Inc., formerly Automated Power Exchange. *See* Joshua Fershee, *Changing Resources, Changing Market: The Impact of a National Renewable Portfolio Standard on the U.S. Energy Industry*, 29 ENERGY L. J. 49, 70 (2008) ("APX technology is now the system of choice for every major renewable energy market in North America, including . . . WECC (WREGIS).").

[12] A nonprofit corporation headquartered in Utah, WECC is a regional electric reliability council that coordinates and ensures the reliability of the Western Interconnection Bulk Power System. Its membership includes transmission operators, utilities, utility customers, and state and provincial regulators. The WECC territory covers the provinces of Alberta and British Columbia, the northern portion of Baja California, Mexico, and all or portions of the 14 western states.

[13] WREGIS is a database designed to track all renewable energy generation in the geographic area covered by the WECC. It is a voluntary, fee-supported system developed by the Western Governors' Association, the Western Regional Air Partnership, and the California Energy Commission.

[14] *See* WREGIS Operating Rule 8.3 (June 4, 2007) ("WREGIS will have no liability to [Account Holders] or any third party for WREGIS Certificates that are created based on incorrect information provided to WREGIS regarding Generating Unit characteristics.").

[15] The majority of information about REC markets is based on a series of conversations with staff at the Bonneville Environmental Foundation, Avista Utilities, Puget Sound Energy, Seattle City Light, and Tacoma Public Utilities from October through December 2009.

[16] *See generally* LORI BIRD AND ELIZABETH LOKEY, NATIONAL RENEWABLE ENERGY LABORATORY, INTERACTION OF COMPLIANCE AND VOLUNTARY RENEWABLE ENERGY MARKETS (October 2007).

[17] *Id*. at 5.

[18] WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, *supra* note 7, at 6.

[19] For a list of major REC aggregators, see the U.S. Dept. of Energy website, http://apps3.eere.energy.gov/greenpower/buying/buying_power.shtml (last visited on Dec. 29, 2009).

[20] EXEC ORDER NO. S-14-08 (Cal. Nov. 17, 2008) (establishing 33 percent target by 2020); EXEC ORDER NO. S-21-09 (Cal. Sept. 15, 2009) (ordering CARB to adopt regulations consistent with 33 percent target). The legal effectiveness of the Executive Orders has been called into question. Among other things, the executive orders are vulnerable to recession by a future governor and CARB may not have the statutory authority to implement an enhanced renewable target. Executive Order S-21-09 was issued several days before Gov. Schwarzenegger vetoed AB 64 and SB 14, which combined would have raised the RPS to 33 percent by 2020 and would have limited the use of unbundled RECs to meeting 25 percent of the new target.

[21] CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY, AIR RESOURCES BOARD, PROPOSED CONCEPT OUTLINE FOR THE CALIFORNIA RENEWABLE ELECTRICITY STANDARD 10 (October 30, 2009).

[22] Created by the federal Northwest Power Act of 1980, the Council develops power plans and a fish and wildlife program for the Columbia River Power System. The governors of Washington, Oregon, Montana, and Idaho each appoint two members to serve on the Council. 16 U.S.C. § 839; Chapter 43.52A RCW.

[23] *See* Memorandum from Jeff King, Senior Resource Analyst, to Power Committee, Northwest Power and Conservation Council (Sept. 24, 2009).

[24] NORTHWEST POWER AND CONSERVATION COUNCIL, DRAFT 6TH POWER PLAN ACTION PLAN GEN 8(b) (Sept. 2009).

[25] Michael Gillenwater, *Redefining RECs--Part 1: Untangling Attributes and Offsets*, 36 ENERGY POLICY 2109, 2110 (2008); ED HOLT AND LORI BIRD, NATIONAL RENEWABLE ENERGY LABORATORY, EMERGING MARKETS FOR RENEWABLE ENERGY CERTIFICATES: OPPORTUNITIES AND CHALLENGES 7 (January 2005).

[26] *See* CARL BLUMSTEIN, LEE FRIEDMAN, & RICHARD GREEN, UC BERKELEY: CENTER FOR THE STUDY OF ENERGY MARKETS, THE HISTORY OF ELECTRICITY RESTRUCTURING IN CALIFORNIA 7 (August 2002).

[27] *Id*. at 12; *see also* RYAN WISER, STEVEN PICKLE, AND CHARLES GOLDMAN, LAWRENCE BERKELEY NATIONAL LABORATORY, CALIFORNIA RENEWABLE ENERGY POLICY AND IMPLEMENTATION ISSUES: AN OVERVIEW OF RECENT REGULATORY AND LEGISLATIVE ACTION 1, 4-5 (September 1996).

[28] Nancy Rader is now the Executive Director of the California Wind Energy Association (CalWEA).

[29] WISER, PICKLE, AND GOLDMAN, *supra* note 27, at 4; Elisa Wood, *Green Trading: Why the Chase Is on for US RECs*, RENEWABLE ENERGY WORLD, May 1, 2007, at ¶ 11 (quoting Nancy Rader's account of proposing the RPS in California).

[30] WISER, PICKLE, AND GOLDMAN, *supra* note 27, at 4.

[31] Interview by Nik Rod with Brent Haddad (August 14, 2009), (http://lifeenergy.blogspot.com//search/label/Interviews (last visited on Dec. 28, 2009). Brent Haddad's PhD. adviser was Richard Norgaard, one of the founders of the ecological economics movement and also the husband of Nancy Rader. *Id*. Haddad is now Professor of Environmental Studies at U.C. Santa Cruz.

[32] *Id.*; Wood, *supra* note 29, at ¶ 13; *See* Brent Haddad, *Putting Markets to Work: The Design and Use of Marketable Permits and Obligations*, OECD PUBLIC MANAGEMENT OCCASIONAL PAPERS NO. 19 (1997).

[33] Wood, *supra* note 29, at ¶ 12. *See Hills Development Co. v. Bernards Township*, 510 A.2d 621, 640-41 (1986) (briefly describing transfer provisions). As a visual aide to explain the concept of tradable renewable energy obligations, Haddad would later pass out RECs "that looked like Monopoly money." Interview by Nik Rod with Brent Haddad, *supra* note 31; *See also* Wood, *supra* note 29, at ¶ 2 ("He designed a fake currency on his computer that looked like a dollar bill, but was denominated in megawatt hours.").

[34] RENEWABLES WORKING GROUP, REPORT TO THE CPUC 40 (August 1996).

[35] The original denomination of a REC was one kilowatt-hour. RENEWABLES WORKING GROUP, REPORT TO THE CPUC 40 (August 1996).

[36] BLUMSTEIN, FRIEDMAN, AND GREEN, *supra* note 26, at 12; WISER, PICKLE, AND GOLDMAN, *supra* note 27, at 1.

[37] S.B. 1078, 2002 Cal. Stat. ch. 516

[38] HOLT AND BIRD, *supra* note 25, at 7.

[39] RYAN WISER AND STEVEN PICKLE, LAWRENCE BERKELEY NATIONAL LABORATORY, SELLING GREEN POWER IN CALIFORNIA: PRODUCT, INDUSTRY, AND MARKET TRENDS 31 (May 1998); *see also* Ed Holt, *Disclosure and Certification: Truth and Labeling for Electric Power*, RENEWABLE ENERGY POLICY PROJECT, ISSUE BRIEF NO. 5, 1 (January 1997) (referring to "confused" customers in New Hampshire).

[40] ENRON, *"GreenTags": A Proposal for Environmental Labeling of Power in New England*, PowerPoint presentation (April 14, 1997) (the spelling of "GreenTags" is in the original presentation) (PowerPoint presentation provided by Ed Holt); HOLT AND BIRD, *supra* note 25, at 7-8 (referring to ENRON as a New England stakeholder that suggested "fuel and environmental attributes be traded separately from the commodity").

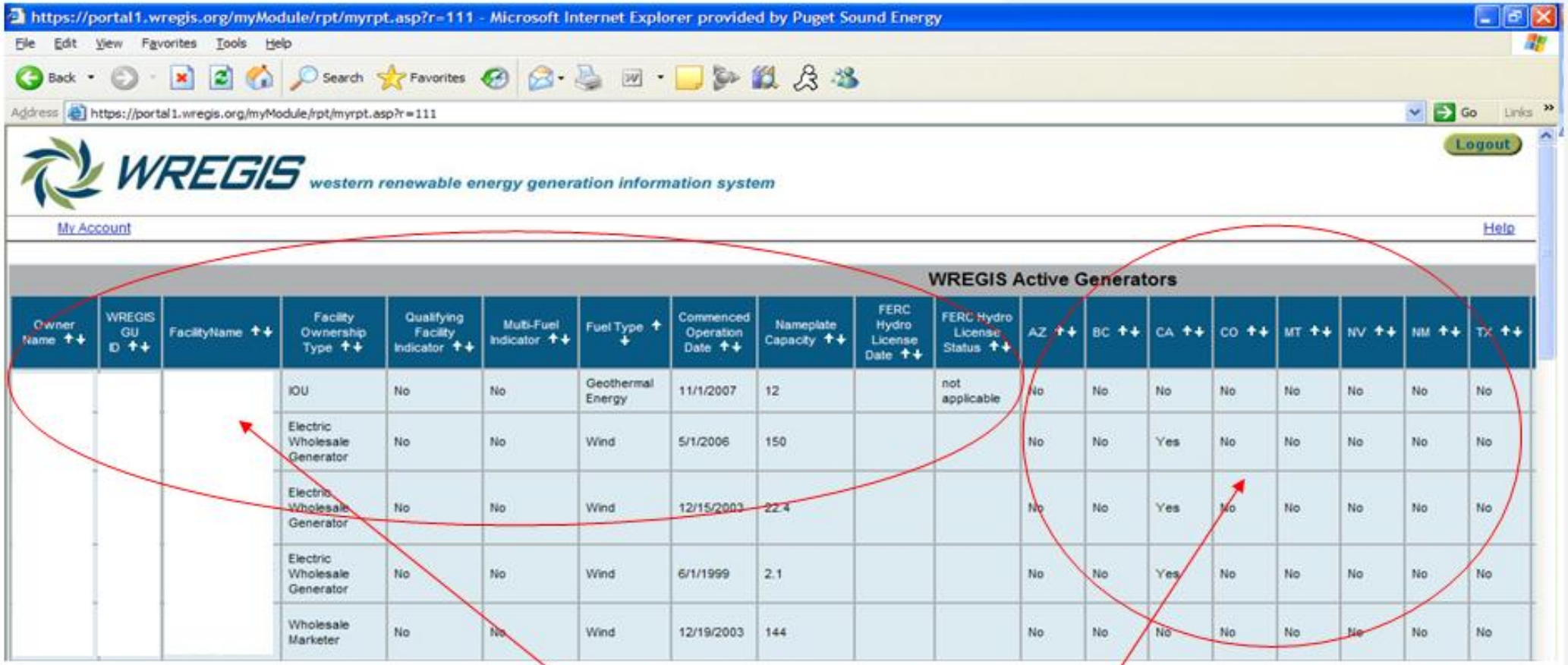
[41] HOLT AND BIRD, *supra* note 25, at 8 (recognizing Texas as the first state to establish a REC trading program); Musier, *supra* note 9, at 1 ("Although Texas was the sixth state to adopt a Renewable Portfolio Standard, it was the first to promulgate meaningful implementation rules."). Arizona, Connecticut, Massachusetts, Maine, and Nevada established RPSs before Texas. *See* BIRD AND LOKEY, *supra* note 16, at 4 (RPS chart).

[42] ERIC MARTINOT, RYAN WISER, AND JAN HAMRIN, CENTER FOR RESOURCE SOLUTIONS, RENEWABLE ENERGY POLICIES AND MARKETS IN THE UNITED STATES 2, 5 (2005), http://www.martinot.info/policies.htm (last visited on December 22, 2009).

[43] HOLT AND BIRD, *supra* note 25, at 8 (noting sale from Bonneville Environmental Foundation to EPA); Jessica Morrison, *Moving Renewable Energy Beyond Green Tags*, NORTH AMERICAN WINDPOWER (April 2006) (noting sale to EPA, region 10, as first retail sale), *available at* http://www.momentumre.com/docs/nawindpower406.pdf (last visited on Dec. 29, 2009).

[44] http://www.dsireusa.org/summarytables/rrpre.cfm (last visited on Dec. 29, 2009).

[45] BIRD AND LOKEY, *supra* note 16, at 3.




**WREGIS Active Generators**

| Owner Name | WREGIS GU ID | FacilityName | Facility Ownership Type | Qualifying Facility Indicator | Multi-Fuel Indicator | Fuel Type | Commenced Operation Date | Nameplate Capacity | FERC Hydro License Date | FERC Hydro License Status | AZ | BC | CA | CO | MT | NV | NM | TX |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | IOU | No | No | Geothermal Energy | 11/1/2007 | 12 | | not applicable | No | No | No | No | No | No | No | No |
| | | | Electric Wholesale Generator | No | No | Wind | 5/1/2006 | 150 | | | No | No | Yes | No | No | No | No | No |
| | | | Electric Wholesale Generator | No | No | Wind | 12/15/2003 | 22.4 | | | No | No | Yes | No | No | No | No | No |
| | | | Electric Wholesale Generator | No | No | Wind | 6/1/1999 | 2.1 | | | No | No | Yes | No | No | No | No | No |
| | | | Wholesale Marketer | No | No | Wind | 12/19/2003 | 144 | | | No | No | No | No | No | No | No | No |

This report available to account holders and provides information about the active generators registered in the WREGIS system, such as:

1. Facility name, commercial operation date, and nameplate capacity
2. In what states or provinces the RECs from the active generators could be eligible for compliance

# Selected Characteristics of Renewable Energy Credits in the WECC
(Attachment 2)

| | Definition of REC | REC Multipliers | Shelf Life | Unbundling Allowed? |
|---|---|---|---|---|
| AZ | One kWh from an eligible renewable energy resource or the kWh equivalent of conventional energy displaced by a distributed renewable energy resource.[1] For distributed renewable energy resources, one REC for each 3,415 BTUs.[2] | 1. Early installation: .1 to .3[3]<br>2. In-state installation: .5[4]<br>3 In-state manufacturing: .5[5]<br>4. Distributed solar: .5[6]<br><br>Multipliers can be combined but may not exceed 2.0[7] | Indefinite.[8] | No.[9] |
| CA | One MWh from eligible renewable energy resource delivered to an end-use retail customer in California and includes "all renewable and environmental attributes."[10] Requires WREGIS verification. [11] | None. | Indefinite.[12] | No. [13] |
| CO | One MWh from eligible energy resource. Includes "full set of non-energy attributes."[14] | 1. Solar electric: 1kWh=3kWh[15]<br>2. In-state generation: 1kWh=1.25kWh[16]<br>3. Community-based: 1kWh=1.5kWh[17]<br><br>Multipliers cannot be combined.[18] | Five years.[19] | Yes.[20] |
| MT | One MWh from eligible energy resource. Includes "all of the environmental attributes."[21] | No multipliers but certain in-state purchase requirements.[22] | Two years.[23] | Yes.[24] |
| NM | One kWh from renewable energy resource and includes "all the environmental attributes."[25] Requires WREGIS registration.[26] | None. | Four years.[27] | Yes, if associated electricity delivered in the state.[28] |

| | | | | |
|---|---|---|---|---|
| NV | One kWh generated or saved by a "portfolio energy system" or efficiency measure. [29] | 1. Distributed solar photovoltaic systems:<br>1 kWh=2.4 kWh[30]<br>2. Non-eligible electricity produced from the microwave reduction of tires:<br>1 kWh=.7 kWh.[31] | Four years.[32] | Yes.[33] |
| OR | One MWh of "qualifying electricity" that is "a unique representation of the environmental" and other benefits associated with a renewable energy resource.[34] Requires WREGIS participation.[35] | Certain solar voltaic systems:<br>1 kWh=2 kWh[36] | Indefinite if REC produced in January 2007 or later.[37] | Yes.[38] |
| WA | At least one MWh from eligible renewable resource not powered by fresh water and includes "all of the nonpower attributes." [39] Requires WREGIS verification[40]. | 1. Distributed generation of no more than 5 MW capacity:<br>1 MW=2 MW[41]<br>2. Eligible renewable facilities constructed after December 31, 2005, using apprenticeship labor:<br>1 MW=1.2 MW[42] | Two years.[43] | Yes.[44] |
| WREGIS | "A Certificate created and tracked within WREGIS will represent all of the renewable and environmental attributes from one MWh of renewable generation." [45] | N/A | Indefinite.[46] | N/A |

[1] ARIZ. ADMIN. CODE R14-2-1801(N) (defining "renewable energy credit"); ARIZ. ADMIN. CODE R14-2-1803(A) (calculating "renewable energy credit.")

[2] ARIZ. ADMIN. CODE R14-2-1803(B) (applying to solar water heating systems, solar industrial process heating and cooling systems, solar space cooling systems, biomass thermal systems, biogas thermal systems, or solar space heating systems.)

[3] Applies to solar electricity resources, solar water heaters, solar space cooling systems, landfill gas generators, wind generators, or biomass electricity generators that were installed and began operations between January 1, 2001, and December 31, 2003. Incentives are as follows: .3 for 2001; .2 for 2002; and .1 for 2003. ARIZ. ADMIN. CODE R14-2-1806(C).

[4] Annual multiplier for the life of a solar electricity resource facility installed in Arizona on or before December 31, 2005. ARIZ. ADMIN. CODE R14-2-1806(D).

[5] Annual multiplier for the life of the following facilities that contain components manufactured in Arizona and installed before December 31, 2005: solar electricity resource, solar water heater, solar space cooling system, landfill gas generator, wind generator, or a biomass electricity generator. ARIZ. ADMIN. CODE R14-2-1806(E). An additional REC multiplier is provided for significant investments in solar electric manufacturing plants located in Arizona. This multiplier, which cannot be combined with the others, is equal to the nameplate capacity of the generators produced and sold in a calendar year multiplied by 2,190 hours. ARIZ. ADMIN. CODE R14-2-1807.

[6] Multiplier for distributed solar electric generators installed in Arizona on or before December 31, 2005, if facilities meet at least two of five specified criteria. ARIZ. ADMIN. CODE R14-2-1806(F).

[7] ARIZ. ADMIN. CODE R14-2-1806(G).

[8] ARIZ. ADMIN. CODE R14-2-1804(C) ("An Affected Utility may use Renewable Energy Credits acquired in any year to meet its Annual Renewable Energy Requirement.").

[9] ARIZ. ADMIN. CODE R14-2-1804(E).

[10] Decision on Definition and Attributes of Renewable Energy Credits for Compliance with California Renewables Portfolio Standard, at 44-45, Cal. Pub. Util. Commission Decision 08-08-028 (August 21, 2008).

[11] *Id*. at 44.

[12] Opinion on Reporting and Compliance Methodology for Renewables Portfolio Standard Program, Attachment A, at. 8, Cal. Pub. Util. Commission Decision 06-10-050 (October 19, 2006) ("If eligible procurement is not used to meet the APT [Annual Procurement Target] in the year in which it was procured, it may be reported as surplus procurement and may be banked and used to meet procurement targets in past or future years.").

[13] Order Instituting Rulemaking to Develop Additional Methods to Implement the California Renewables Portfolio Standard, at 36, Cal. Pub. Util. Commission Decision 06-10-019 (October 5, 2006).

[14] 4 COLO. CODE REGS. 723-3-3652(n).

[15] Multiplier applies to solar electric generation technology that started producing electricity prior to July 1, 2015. 4 COLO. CODE REGS. 723-3-3654(e).

[16] Multiplier applies to eligible energy generated in Colorado. 4 COLO. CODE REGS. 723-3-3654(f).

[17] Multiplier applies to "community-based projects" in Colorado. 4 COLO. CODE REGS. 723-3-3654(g). A "community based project" (a) is owned by individual residents of a community, a local nonprofit organization, a cooperative, a local government entity, or a tribal council; (b) whose generating capacity does not exceed 30MW; and (c) for which there is a resolution of support adopted by the local governing body of the jurisdiction where the project is located. 4 COLO. CODE REGS. 723-3-3652(c).

[18] 4 COLO. CODE REGS. 723-3-3654(h).

[19] 4 COLO. CODE REGS. 723-3-3654(i)(III) ("[F]ive compliance years immediately following the compliance year during which it was generated.").

[20] *See* 4 COLO. CODE REGS. 723-3-3654(j) (allowing utility to substitute "equivalent RECs . . . for eligible energy"); *see also* COLO. REV. STAT. 40-2-124(1)(d) ("A system of tradable renewable energy credits may be used . . . to comply with the" RPS.).

[21] MONT. CODE ANN. 69-3-2003(14).

[22] Beginning January 1, 2012, utilities must purchase RECs and electricity from community renewable energy projects of at least 50 MW of nameplate capacity, increasing to 75 MW in 2015. MONT. CODE ANN. 69-3-2004(3)(b) & (4)(b). A "community renewable energy project" is an eligible renewable resource that is less than or equal to 25 MW in total calculated nameplate capacity, and that is either (a) interconnected on the utility side of the meter, in which local owners have a controlling interest or (b) is owned by a regulated utility. MONT. CODE ANN. 69-3-2003(4). "Local owners" means "Montana residents or entities composed of Montana residents; Montana small businesses; Montana nonprofit organizations; Montana-based tribal councils; Montana political subdivisions or local governments; Montana-based cooperatives other than cooperative utilities;" or any combination of the above. MONT. CODE ANN. 69-3-2003(11).

[23] MONT. CODE ANN. 69-3-2004(9) (allowing RECs to be carried forward "2 subsequent compliance years").

[24] MONT. CODE ANN. 69-3-2004(7)(a)(ii) (allowing RECs "purchased separately from the associated electricity").

[25] N.M. STAT. ANN. 62-16-3(F).

[26] N.M. ADMIN. CODE 17.9.572.13(E).

[27] N.M. ADMIN. CODE 17.9.572.13(C)(4) (allowing RECs to "be carried forward for up to four (4) years from the date of creation")

[28] N.M. ADMIN. CODE 17.9.572.13(C)(2) (allowing unbundled RECs only if associated electricity is delivered in New Mexico unless utility commission "determines that there is an active regional market for trading renewable energy and renewable energy certificates in any region in which the public utility or rural electric distribution cooperative is located"). Because WREGIS is only a tracking system, it does not satisfy the condition that an "active regional market" must exist before all unbundled RECs are allowed to meet the RPS.

[29] Nevada uses the term "portfolio energy credit." NEV. REV. STAT. 704.7803 (defining "portfolio energy credit"); NEV. REV. STAT. 704.78215 (calculating "portfolio energy credits").

[30] Multiplier applies to solar voltaic systems installed on the premises of a retail customer and the customer uses at least 50 percent of the output on the premises, on an annual basis. NEV. REV. STAT. 704.7822.

[31] Creating electricity from tires does not count as a renewable energy source. But electricity produced from the noncombustion, microwave reduction of tires, called a "reverse polymerization process," may nevertheless be applied to the RPS at .7 kWh for every 1 kWh produced if the system is installed on the premises of a retail customer and the customer uses at least 50 percent of the output on the premises, on an annual basis. NEV. REV. STAT. 704.7823.

[32] NEV. ADMIN. CODE 704.8881(2)(b) (allowing the use of "excess kilowatt-hours" to comply with the RPS "for the 4 compliance years immediately following" the current compliance year).

[33] Only if RECs are produced from electricity delivered to the state. *See* SB 358 (Nev. 2009) (enacted) (amending NEV. REV. STAT. 704.7815(1)); EDWARD HOLT AND RYAN WISER, LAWRENCE BERKELEY NATIONAL LABORATORY, THE TREATMENT OF RENEWABLE

CERTIFICATES, EMISSIONS ALLOWANCES, AND GREEN POWER PROGRAMS IN STATE RENEWABLES PORTFOLIO STANDARDS 5 (April 2007).

[34] Oregon uses the term "renewable energy certificate." OR. ADMIN. R. 330-160-0015(8).

[35] OR. ADMIN. R. 330-160-0020.

[36] Multiplier is capped at 20 MW of capacity for each investor owned utility and applies to in-state solar photovoltaic systems, which are located in the service territories of investor-owned utilities, which become operational before January 1, 2016, and which generate at least 500 kW and no greater than 5 MW. H.B. 3039, 75th Leg., Reg. Sess., 2009 Or. Laws ch. 748.

[37] OR. ADMIN. R. 330-160-0030(3) ("Banked renewable energy certificates with a vintage of January 2007 or later, both bundled and unbundled, may be held for future use within the WREGIS renewable energy certificate system to comply with the Oregon RPS.").

[38] OR. REV. STAT. 469A.135(2) (allowing unbundled RECs if originate within WECC boundary). Large investor owned utilities may satisfy no more than 20 percent of their annual RPS obligations with unbundled RECs; however, RECs from net-metered facilities in Oregon or in-state PURPA [Public Utility Regulatory Policies Act] facilities are exempt from the limit. OR. REV. STAT. 469A.145. Large consumer-owned utilities may satisfy no more than 50 percent of their obligations with unbundled RECs until 2020. 2007 Or. Laws ch. 301, sec. 17a; *see* OR. REV. STAT. 469A.145 note. PURPA is a federal law that, among other things, requires utilities to purchase the output of small energy projects.

[39] RCW 19.285.030(17).

[40] WAC 194-37-040(31) (selecting WREGIS as tracking system for RECs).

[41] RCW 19.285.040(2)(b).

[42] RCW 19.285.040(2)(h).

[43] RCW 19.285.040(2)(e) (allowing RECs to be used the current year, "the preceding year, or the subsequent year").

[44] *See* RCW 19.285.040(2)(a) (allowing the use of RECs to satisfy RPS).

[45] WREGIS Operating Rule 12 (June 4, 2007).

[46] WREGIS Operating Rule 12.8 (June 4, 2007) ("WREGIS Certificates have no expiration and will remain Active until Retired or Reserved.").